scapular area. Upon the left arm along the posterior axillary fold were linear ecchymoses, and a few spots of hemorrhage and infiltration over the biceps. The spleen and liver were both enlarged. The patient improved decidedly during his stay in the hospital. The continuous warm bath was used, the patient remaining seventeen or eighteen hours in the tub. The skin improved very much, but fresh hemorrhages occurred at intervals. Examination of the skin excised from the leg showed much iron-containing pigment in the connective tissue of the corium, and an increase in the small mononuclear elements. Six months later the condition of the skin had changed very little. About one year after the last examination the patient died of pernicious malaria.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
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Report of Investigation of Spotted Fever.—Wilson and Chowning (*First Biennial Report of the Montana State Board of Health*). The disease known in Montana as "spotted fever" has been recognized as a distinct clinical entity by physicians of the Bitter Root Valley for fifteen to twenty years. It is confined to the eastern foot-hills of the Bitter Root Mountains in a valley on the western side of the Bitter Root River, but outside of this comparatively small area the disease is rarely if ever seen. Spotted fever is met with only in the spring months, appearing between March and July. Persons who are constantly out-of-doors upon the foot-hills and mountains are the ones oftenest attacked, and apparently for this reason the disease is more common in males than in females. The mortality is very high; 70 per cent. to 80 per cent. of the cases end fatally. Death usually occurs between the sixth and eleventh days of the disease, but should the termination be favorable the attack is prolonged, and convalescence is slow. An initial chill usually marks the onset of the disease, while the early symptoms are headache, backache and joint pains. The general appearance is much like that of typhoid fever. After the initial chill the temperature rises to 103° or 104° F., and in five to seven days may reach 105° or 107° F. If the patient recovers the temperature usually falls by lysis. The eruption, which has given the name to the disease, makes its appearance from the second to the fifth day after the chill, spreading from the wrists, ankles and back over the entire body. At first the rash is macular, of a rose-red hue, and disappears on pressure; but later the spots become permanent, much larger, and assume a deep purple hue. Purplish petechiæ may be present. The skin ordinarily shows some jaundice, and the vessels of the conjunctivæ are injected. Superficial gangrene, pneumonia, and articular rheumatism may arise as complications. At autopsy no specific lesions are found. All the organs are congested and show the evidences of an acute infection.

In the red blood cells of the circulating blood the authors found an organism which they believe is a hitherto undescribed hæmatozoon. In a fresh drop of blood from the patient's ear the parasites are not very numerous, though they may be found with careful search during the entire course of the disease. As far as may be determined, two stages can be recognized in the life-cycle of this parasite. In the first phase the organisms appear as small hyaline oval bodies, 1 micron in thickness by 1½ microns in length. Two of these bodies may occur in the same corpuscle. Motility has not been observed. In the second stage oval or irregular solitary bodies are seen within the red blood corpuscles. This form measures from 2 to 3 microns in breadth and 5 microns in length; it is actively amœboid, and constantly throws out and draws in small pseudopodia, thus changing its shape with great rapidity. The parasites are readily stained by methylene blue, Nocht-Romanowsky, hæmatoxylin and Jenner's mixture. While the organisms are scarce in the circulating blood, they may be found in abundance within the red blood cells of the internal organs. In sections and smears from the heart muscle, spleen, liver, and kidneys great numbers of red blood corpuscles are seen containing parasites, and frequently many phagocytes are observed which have absorbed one to eight infected red blood cells.

By means of subcutaneous inoculations of spleen and heart's blood from autopsy cases the disease can be transmitted in a mild form to rabbits, and for many days the red blood corpuscles of these animals are found to harbor parasites. The mode of infection is believed to be through tick bites, although direct proof of this means of transference is not yet established. The tick is not suspected, however, of carrying the parasite from man to man, but is considered to act as an intermediate host and to receive the parasite from the "gray gopher" or "ground squirrel." This rodent is plentiful in the infected district, and, moreover, its geographical and seasonal distribution bears a close relationship to the situation and occurrence of "spotted fever." Several "gray gophers" were captured, and in the blood of many of these animals parasites were found which were similar in all respects to those seen in the red blood corpuscles of the blood from cases of spotted fever.

The interesting fact was also noted that only the gophers from the west side of the river harbored parasites, while those from the east side, where spotted fever does not occur, were entirely free from the infection. The authors in concluding suggest that many points will have to be investigated before the study of the disease or its mode of transmission can be completed.

On a Dysentery Antitoxin.—CHARLES TODD (*Brit. Med. Jour.*, 1903, vol. ii. p. 1457) concludes from his work upon dysentery antitoxins that by growing the dysentery bacillus in a somewhat highly alkaline broth a soluble toxin is obtained. Certain animals, notably the horse and rabbit, are highly susceptible to this toxin. The toxin is fairly stable, and though destroyed by an exposure to a temperature of 80° C.